Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
Revision of Parts 2 and 15 of the Commission's	)	ET Docket No. 03-122
Rules to Permit Unlicensed National Information	)	RM - 10371
Infrastructure (U-NII) devices in the 5 GHz band	)	

1. Introduction

Proxim Corporation is a global leader in wireless networking equipment for local area and wide area networks. Proxim provides enterprise and service provider customers with wireless solutions for public hotspots, voice and data backhaul, enterprise campuses, security and surveillance, broadband wireless access, and mobile professionals. As such, Proxim has a direct interest in this proceeding as it concerns access to spectrum for unlicensed devices, which comprise the vast majority of Proxim's products both in the LAN (local area network) and WAN (wide area network) solution segments.

2. Proxim supports the FCC's proposals to change the table of allocations

In its NPRM, the FCC has recommended several changes to the table of allocations[1] and to the Part 15 rules to allow U-NII devices to operate in the 5.470-5.725 GHz band on a non-interference basis.[2] This proposal was based on a petition for rule making by the Wi-Fi Alliance, in which Proxim is an active participant. Since the time that this petition was filed, industry representatives have worked closely with government

[1] Revision of Parts 2 and 15 of the Commission's Rules to Permit Unlicensed National Information Infrastructure (U-NII) devices in the 5 GHz band, ET Docket No. 03-122, Released June 4, 2003 [Hereinafter "NPRM"], ¶13
[2] NPRM ¶14

spectrum users to craft sharing rules that are amenable to all spectrum users. In addition, at the ITU's WRC 2003, the international community designated spectrum in the 5 GHz range, including the 5.150-5.350 and 5.47-5.725 GHz bands, for international harmonization for Wireless Access Systems, including Radio LANs.

As a participant in all of these processes, Proxim enthusiastically supports the proposals offered by the FCC, particularly those that relate to the 5 GHz U-NII rules. As was emphasized in the Wi-Fi Alliance petition, and as pointed out in the FCC's working paper on unlicensed devices[3], the market for unlicensed wireless devices is growing dramatically, as business, consumers, and vertical markets recognize the convenience and improved efficiencies these devices can bring. The FCC's analysis recognizes that "[t]he sales of W-LAN equipment have experienced double-digit growth since 2000, representing a total growth of over 150% … [and that] [a]t this rate, wireless LAN sales will eclipse cordless telephones as the leading revenue generator sometime between 2002 and 2004."[4] This kind of dramatic growth shows that consumers of these products recognize their value, and it is very appropriate for the FCC to continue to designate spectrum into which these products can be deployed, as it did when it first created the U-NII bands.

3. More spectrum will be required for higher power operations

In its NPRM, the FCC suggests that the power in the newly proposed 5 GHz U-NII band be limited to 1 watt EIRP in order to protect incumbent systems. While Proxim

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[3] Unlicensed and Unshackled: A Joint OSP-OET White Paper on Unlicensed Devices and Their Regulatory Issues, OSP Working Paper Series Number 39, Kenneth R. Carter, Ahmed Lahouji, and Neal McNeil, May 2003.

[4] OSP Working Paper number 39, page 26.

agrees with the need to protect incumbent systems, we believe that the further contention of the FCC that "the 100 MHz of spectrum that is already available at 5.725-5.825 GHz will remain sufficient for higher power operations"[5] is premature.

As discussed above, over the last few years, unlicensed wireless use has grown exponentially. In large measure, this is due to the popularity of the 802.11 standards that have increased interoperability, lowered costs and lowered the prices to the end users, and brought unlicensed wireless use to a mass market audience. Until now, the outdoor unlicensed environment has been dominated by proprietary equipment, since the installer of the equipment usually has control of both ends of the link. However, the IEEE standards body has now created a set of standards, the 802.16 standards, which address this market directly. The expectation is that the standardization activity in this area will result in similar growth in this market.

As discussed in the FCC's Working Paper[6], fixed wireless communications is already an important market for unlicensed wireless equipment. Proxim sells unlicensed wireless equipment for last mile access, campus networking, voice and data backhaul, public access networks, as well as security and surveillance applications. These types of networks are already addressing requirements for Homeland Security, and they offer one of the best chances to enable facilities based competition to wireline broadband service providers, helping to decrease the digital divide and promote access to broadband networks. These networks have only just started to be deployed for these kinds of uses, and we expect that this market will continue to grow rapidly over the next few years.

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[5] NPRM ¶18
[6] OSP Working Paper number 39, page 16.

With the advent of standards-based products, we expect the market to experience a rapid growth curve reminiscent of the wireless LAN market.

Therefore, though the unlicensed wireless band in the current notice is not appropriate for high power applications, Proxim believes that additional unlicensed spectrum for use by high power outdoor operations will be required in the next few years.

4. The DFS rules as proposed by the industry/government working group are appropriate

The DFS rules as agreed to by the joint industry/government working group, and as proposed in this Notice, are appropriate for protecting operations in the band. The FCC has asked, specifically, about whether 10*Log (BW/1 MHz) (where BW is the U-NII device's bandwidth) should be used as the appropriate correction factor for U-NII devices that have a bandwidth less than 1 MHz. In the simulations which led to the proposals in this notice, such a correction factor was applied when the bandwidth of the receiver was less than the bandwidth of the transmitter, and, since the DFS threshold values are referenced to a 1 MHz bandwidth, any device with a receiver bandwidth of less than 1 MHz should be able to detect radar interference at a correspondingly lower threshold value.

However, it should be recognized that the FCC is proposing that this new 5 GHz spectrum be used for U-NII devices which, according to the FCC's own definition "use wideband digital modulation techniques and provide a wide array of high data rate mobile and fixed communications for individuals, businesses, and institutions."[7] Therefore, it would seem to be highly unlikely, and counter to the spirit of the regulations, to have devices operating with bandwidths that are narrower than 1 MHz.

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[7] 15.403(i).

Assuming that such narrowband devices can satisfy the spirit of the U-NII rules, the correction factor as proposed is appropriate.

5. The concept of master and slave devices is appropriate and should be further defined

In its Notice, the FCC has proposed that, in systems operating under the control of a central controller, "only the central controller be required to have DFS capability."[8] Proxim is highly supportive of this concept. There are many scenarios in which a client device attached to a central controller would be under a prohibitive burden were it to have to perform DFS monitoring functions. For example, devices that have extreme power saving modes need to spend most of their time, when not communicating directly with the central controller, in a sleep mode.

Though the FCC uses the term "master device"[9] as well as the concept of "slaves"[10], these terms are never precisely defined in this Notice. Proxim recommends that the concepts of master and slave devices be defined to conform to the ETSI definition of these terms in ETSI EN 301 893[11]. This specification also provides an answer to the question of remote devices not under the control of a master.[12] As described in the ETSI specification:

> The manufacturer shall state whether the UUT [unit under test] is capable of operating as a Master and/or as a Slave. In the case the UUT is a Slave the maximum power level of the UUT will define whether or not the UUT needs to have Radar Interference Detection Function. If the UUT

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[8] NPRM ¶22
[9] NPRM ¶22
[10] 15.407(h)(2)(a)(i) and 15.407(h)(2)(a)(ii).
[11] Broadband Radio Access Networks (BRAN); 5 GHz high performance RLAN; Harmonized EN covering essential requirements of article 3.2 of the R&TTE Directive, Final draft ETSI EN 301 893 V1.2.2 (2003-06).
[12] "We also invite comment on how to identify remote units that operate only under the control of a central controller", NPRM ¶22.

> is capable of operating in more than one operating mode then each operating mode shall be tested separately.[13]

It should not be necessary to identify remote devices operating under control of a master other than at the time of product certification, since any devices operating without the control of a master will have the DFS capability as required for product certification.

6. Details of DFS operational requirements will come from the Informal 5 GHz Project Team

The FCC has requested specific input on a number of DFS parameters, such as "the minimum number of pulses and the observation time required for reliable detection"[14], and triggering mechanisms for, and details surrounding, TPC (transmitter power control)[15]. Proxim is a participant in the informal 5 GHz project team, an outgrowth of the industry/government group that developed the compromise position for sharing of the 5 GHz spectrum. The work of this group led to a supportive US position at the WRC 2003 as well as to the current Notice. This team is currently working on bench testing and field testing procedures that will provide the most useful details of the kind the FCC is seeking. Proxim advises the FCC to continue to monitor the work of this group.

7. Consistent international certification procedures will enable strong market growth

The FCC has also asked for comment on "appropriate test procedures needed to ensure compliance with the DFS and TPC requirements proposed in this proceeding."[16] Proxim feels strongly that the FCC should attempt, as much as possible, to be part of a

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[13] Final draft ETSI EN 301 893 V1.2.2 (2003-06), section 4.6.
[14] NPRM ¶23
[15] NPRM ¶24
[16] NPRM ¶25

worldwide, harmonized certification regime for products that operate in these bands. One of the reasons that unlicensed devices, and 802.11 devices in particular, have seem such tremendous growth is that the market for the devices is global. The 5 GHz unlicensed bands have been at a disadvantage relative to the 2.4 GHz bands for some time due to a lack of globally harmonized spectrum. With the progress made at WRC 2003 in this area, it would be unfortunate to have harmonized spectrum, but vastly different certification regimes.

The WLAN industry has been working for years to craft product conformance testing procedures within the ETSI standards committee, and these are embodied in the ETSI EN 301 893 standard. It is Proxim's recommendation that, as much as possible, the FCC should create procedures to test DFS and TPC functionality so that a common equipment authorization program can be used in the US, ETSI countries, and the rest of the world.

8. The transition period rules should be clarified and amended

In its Notice, the FCC has proposed a transition period for equipment operating in the 5.250-5.350 GHz band. In one location the transition period is described to be "effective for U-NII equipment that is certified after one year from the date of publication of the Report and Order in this proceeding in the Federal Register … [and] all U-NII devices operating in the 5.250-5.350 GHz band that are <u>imported or shipped in interstate commerce on or after two years from the date of publication</u> in the Federal Register comply with these standards."[17] In another location it states that the Notice "proposes that the DFS requirement for the 5.250-5.350 GHz band effective for U-NII equipment

[17] NPRM ¶26 (underlining added)

that is certified after one year from the date of publication of the Report and Order in this proceeding in the Federal Register. It also proposes to require that all U-NII devices operating in the 5.250-5.350 GHz band that are imported or shipped in interstate commerce on or after three years from the date the adopted rules are published in the Federal Register comply with these standards."[18] Finally, the new proposed rules state:

> U-NII Equipment operating in the 5.25 – 5.35 GHz band that are authorized under the certification procedure on or after [1 year after publication of R&O in ET Docket No. 03-122 in the Federal Register] shall comply with the DFS requirement specified in Section 15.407 of this part. All UNII Equipment operating in the 5.25 – 5.35 GHz band that are manufactured or imported on or after [2 years from publication of R&O in ET Docket No. 03-122 in the Federal Register] shall comply with the DFS requirement specified in Section 15.407 of this part.[19]

Each of these descriptions of the transition period is slightly different. Proxim requests that the FCC clarify its proposal for the transition period.

In each of these descriptions above, however, the implication is that products manufactured to operate in the 5.250-5.350 GHz band must, after some period, implement DFS procedures. Products which have already been deployed, however, do not need to be upgraded to implement these DFS procedures. Proxim proposes that rather than place any restrictions on manufacturing, importation, or shipping products, the FCC only apply this transition period to new certifications. The reason for this is to prevent these rules from creating a burdensome set of recording requirements, documenting specifically when any given device was "manufactured" (which could become a definitional problem, if the products are partially manufactured in one location

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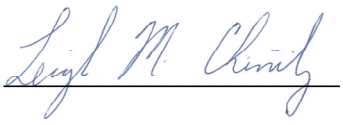
[18] NPRM, Initial Regulatory Flexibility Analysis (underlining added)
[19] 15.37(l) (underlining added)

and finished in another), shipped, imported, etc. The life cycle of unlicensed wireless products is relatively short, typically measured in months rather than years. Therefore, the FCC would still accomplish its objective, and it would avoid opening the door to onerous record keeping requirements, if the new transition period were simply to apply to new product certifications, one or two years after some specified date.

9. Summary

Proxim Corporation is very pleased with the FCC's proposals that will nearly double the amount of unlicensed spectrum available in the 5 GHz band. The explosive growth in the adoption of these types of products validates the FCC's earlier vision and allocation of unlicensed spectrum, and it provides the rationale for expanding spectrum access for unlicensed devices. We hope that the FCC will continue down the path of international harmonization, with rules that will continue to promote global markets so that consumers can continue to benefit from the high volumes, high quality, and low prices that those markets allow.

Respectfully submitted,



Leigh Chinitz
Chief Technology Advisor
Proxim Corporation

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